



Economic Letter

Assessing the Costs and Consequences of the 2007–09 Financial Crisis and Its Aftermath

by David Luttrell, Tyler Atkinson and Harvey Rosenblum

► There are few estimates of what society gave up due to the crisis: Our conservative estimate is \$50,000 to \$120,000 for every U.S. household.

A confluence of factors produced the December 2007–June 2009 Great Recession—bad bank loans, improper credit ratings, lax regulatory policies and misguided government incentives that encouraged reckless borrowing and lending.

The worst downturn in the United States since the 1930s was distinctive. Easy credit standards and abundant financing fueled a boom-period expansion that was followed by an epic bust with enormous negative economic spillover.

Despite extensive reviews of the causes and consequences of the most recent financial crisis, there are few estimates of *what it cost*—the value of what society gave up. Such a figure would help determine the relative expense of policy proposals designed to avoid future crises. Any estimate of the toll exacted is bound to be incomplete—for example, there may be future expenses not yet recognized—so it's useful to calculate a range of likely costs.¹

What Society Gave Up

One way to measure the cost of lost output is in terms of how much worse off society is relative to a baseline trend that might have existed absent the crisis. Such an exercise is crucial to grasping

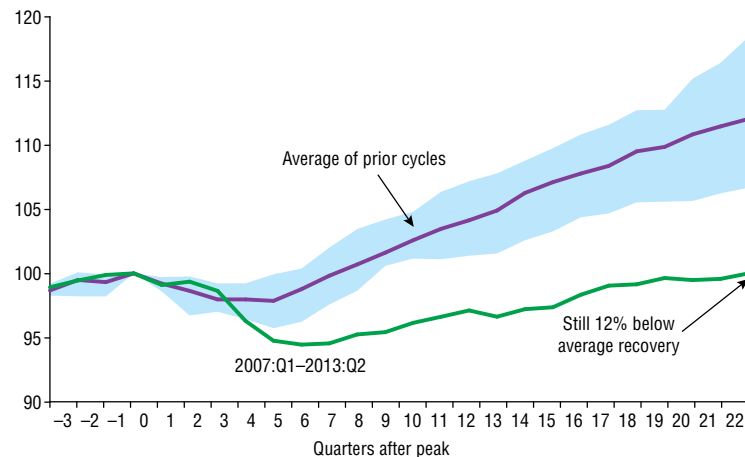
the magnitude of what occurred and the effects of the still-emerging recovery. Output per person as of mid-2013 stood 12 percent below the average of U.S. economic recoveries over the past half-century, corroborating a large body of literature suggesting that recoveries from financial crises are slower than rebounds from typical recessions (*Chart 1*).

Our bottom-line estimate of the cost of the crisis, assuming output *eventually* returns to its precrisis trend path, is an output loss of \$6 trillion to \$14 trillion. This amounts to \$50,000 to \$120,000 for every U.S. household, or the equivalent of 40 to 90 percent of one year's economic output. This seemingly wide range of estimates is due in part to the uncertainty of how long it might take to return to the precrisis growth trend. However, output may never return to trend—the path of future output may be *permanently* lower than before. If that's the case, the crisis cost will exceed the \$14 trillion high-end estimate of output loss.

The crisis consumed an enormous sum of financial and housing wealth. U.S. household net worth plunged \$16 trillion, or 24 percent, from third quarter 2007 to first quarter 2009. In addition, it wiped out a huge amount of “human capital,” both current wage income and discounted future wage income; that is, a household's

Chart 1 Rebound in Per Capita Output Weaker than in Previous Cycles

Real GDP per capita index, 100 = cycle peak



NOTE: The shaded area indicates the range of major recessions since 1960, excluding the short 1980 recession.

SOURCES: Bureau of Economic Analysis; Census Bureau; authors' calculations.

expectation of potential earning power. If the effects of the crisis are permanent, the path of consumption observed since 2007 suggests that the cost of the crisis may be more than double the \$6 trillion to \$14 trillion estimate. The results of both the output-loss and path-of-consumption approaches are presented in Table 1A.²

Some of the harder-to-quantify impacts of the crisis, shown in Table 1B, are the consequence of extended unemployment, reduced opportunity and increased government presence in the economy.

Even taking into account the likely overlap of estimates in Table 1A and 1B,

the total cost of the crisis easily exceeds the value of the nation's output for an entire year.

Explaining the Output Loss

The \$6 trillion to \$14 trillion base estimate of lost output following the crisis depends on assumptions about the economy's trend rate of growth and whether an oil-price shock in 2008 might have caused a mild recession anyway.³ This estimate of the aggregate cost of the crisis covers 2008 to 2023, when output is assumed to fully return to trend. Ultimately, there is no way to know

for sure what path output would have followed or even if the financial crisis caused the output drop. The standard assumption is that trend growth would have continued at a pace similar to that in the preceding period. From 1984 to 2007—a period often referred to as the Great Moderation due to its relative economic and price stability—the average annual growth rate of gross domestic product (GDP) per capita was 2.1 percent.

Conceivably, historically high crude oil prices were partly responsible for the contraction that followed, and trend growth overstates what output would have been. The cause of the oil shock, however, may be inseparable from the roots of the financial crisis. A global-imbalances narrative posits that an influx of overseas demand for U.S. financial assets fueled an unsustainable creation of structured credit products (financial instruments such as mortgage-backed securities) that pushed real (inflation adjusted) interest rates lower. This connection between financial flows and various hard-asset commodity prices—including the crude oil price spike—sowed seeds of instability in 2007–08.

The estimated gap between what GDP would have been absent the financial crisis and realized GDP is shown in Chart 2. The graphic also captures the possibility that an oil-shock recession would have occurred regardless of the crisis.

The forecast (represented by the red line in Chart 2) provides a reasonable middle ground between the extremely unlikely, immediate return to trend and the uncertain, perpetual output loss implied by a continued modest pace of economic growth (represented by the blue line in Chart 2). In addition to impacting the amount of U.S. goods and services produced, the 2007–09 bust triggered (or is at least associated with) a worldwide downturn. A similar output-loss exercise for world GDP excluding the U.S. results in an estimated \$8.1 trillion loss just through year-end 2012.

Trauma and Reduced Capacity

While the recession was an economic phenomenon, its impact went beyond a sizable drop in output or consumption. The adverse psychological consequences

Table 1 Different Approaches to Measuring the Crisis' Cost

A. Looking at Lost Output and Forgone Consumption

	According to path of output	According to path of consumption
Cost in 2012 dollars	\$6 trillion–\$14 trillion	\$15 trillion–\$30 trillion
Percent of 2007 output	40–90%	100–190%

B. Other Harder-to-Quantify Outcomes

	National trauma and lost opportunity	Extraordinary government support
Cost in 2012 dollars	Up to \$14 trillion	\$12 trillion–\$13 trillion
Percent of 2007 output	Up to 90%	80–85%

are enormous, even if they are not easily quantifiable.

Nonfarm payrolls fell by more than 8.7 million, or 6.3 percent, and the number of unemployed climbed to 14.7 million over the course of the recession, peaking at 10 percent of the nation's labor force in October 2009. Further, many workers faced extended bouts of unemployment or left the labor force altogether. The ranks of the underemployed (those who want a job but can only find part-time work) and frustrated job seekers (those who become discouraged and give up looking for work) rose to 12 million, a 94 percent increase. In July 2013, four years after the recession is deemed to have ended, labor underutilization remains intractably high: 11.5 million people are unemployed and an additional 10.6 million are underemployed or frustrated.

Branches of economics that survey broader measures of life satisfaction apart from income have confirmed the intuition of the nonpecuniary costs of unemployment—for example, the psychological effects of stress and feelings of diminished self-worth.⁴ In addition, higher unemployment has spillover effects on the rest of society: decreased job security for the employed as well as higher taxes to fund the transfer payments to the jobless and the underemployed. While the psychological toll of a weakened economy may be small for employed workers relative to the unemployed, the aggregate societal consequences can be significant.⁵

Although subjective well-being can be hard to quantify, one study estimated a cost of as much as \$14 trillion from loss of security in the workforce due to rising unemployment.⁶ This figure represents the lost income of the unemployed, the value of the loss of subjective well-being among the unemployed and the negative spillover effects on the employed, including the adverse effects of high unemployment on future income and job prospects.

A job is a path to dignity and a sense of accomplishment that is paramount to personal progress. Optimism regarding perceived opportunities—the notion that the future will be better than the present—is a crucial source of motivation for job seekers and job keepers. The

crisis deflated this sense of security and optimism for many—reflected in a downward revision to households' permanent income, some of the decline in the labor force participation rate and a slower pace of household formation observed from 2007 through 2011. Individuals change these behaviors when they reassess their medium- and long-term prospects and do not like what they see.

A stark legacy of the recession and the lackluster labor market is reduced opportunity and deterioration captured in subjective measures of well-being. Since the recession's onset in December 2007, more citizens believed their income would be lower in the future than thought it would be higher. This is the first time in *any* recession since the 1960s that income expectations turned negative.⁷

Unintended Consequences

The crisis resulted in a significant loss of trust in government institutions and the U.S. capitalist economic system. In the Fraser Institute's Index of Economic Freedom global ranking, the U.S. fell from second in 2000 to 18th in 2012. The assessment by the economics and public policy think tank is based on 42 variables that involve aspects of government size, property rights, money soundness, international trade freedom and regulation.⁸ The lower ranking reflected perceptions of less-secure property rights, bigger government, increased regulation of businesses and favoritism accorded to special interests.

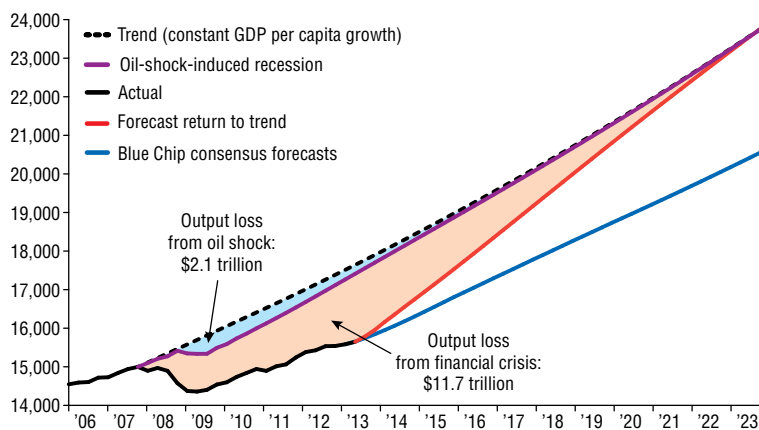
A crisis of confidence portends a loss of public trust. Saving the system from complete collapse—especially with extraordinary government assistance, including bailouts to a handful of giant financial institutions—reinforced a perception that public support exists primarily for large, interconnected, complex financial entities. Deemed “too big to fail,” these financial intermediaries lacked discipline and accountability leading up to the crisis and proved largely immune to the downside of their excessive risk taking. This special treatment violated a basic tenet of American capitalism: All people and institutions have the freedom to succeed and also to fail based on the merits of their actions. In a way, the 2008–09 bailouts exacted an unfair and nontransparent tax upon the American people.⁹

Although unprecedented fiscal and monetary action in the throes of panic during 2008–09 may have prevented a full-blown depression, such intervention did not come without significant costs. Society must deal with the consequences of a swollen federal debt, an expanded Federal Reserve balance sheet and increased regulations and government intervention for years to come. Direct government support for the U.S. financial sector totaled approximately \$12.6 trillion, or more than 80 percent of 2007 GDP—a sum over and above what was provided via precrisis Federal Deposit Insurance Corp. deposit insurance limits and the Federal Reserve's traditional

Chart 2

Output Loss Is Large Even with Optimistic Forecast

Real GDP, billions of 2009 dollars



SOURCES: Bureau of Economic Analysis; Census Bureau; Blue Chip Economic Indicators; authors' calculations.

monetary policy operations and lender-of-last-resort functions.¹⁰

The degree to which the cost of public policies' unintended consequences should be attributed to the crisis is not obvious. However, aggressive countercyclical fiscal and monetary stimulus would not have been implemented if not for the crisis, and thus the unintended consequences are largely attributable to the crisis. Government funds allocated to fighting the effects of the crisis couldn't be spent on other items such as infrastructure and education that enhance the nation's capital stock—its productive capacity.

At Least an Entire Year's Output

The 2007–09 meltdown produced a huge downshift in the path of economic output, consumption and financial wealth. The nation has borne additional costs arising from psychological consequences, skill atrophy from extended unemployment, a reduced set of economic opportunities and increased government intervention in the economy. Assuming the financial crisis is the root cause of all that dislocation, an estimate of the crisis' overall cost must be weighed against the potential costs of policies intended to prevent similar episodes in the future.

We conservatively estimate the loss of national output as a result of the financial crisis and its aftermath at between \$6 trillion and \$14 trillion. The high end of this range is equal to nearly one year of U.S. output. Including broader and more-difficult-to-quantify measures that reflect the lingering trauma experienced by millions of Americans pushes these costs still

higher—possibly to as much as two years' worth of forgone consumption.

Given this range of estimates, the tepid economic recovery and the collateral damage sustained, it is crucial to implement effective policies that avoid future episodes whose magnitude could exceed even the staggering costs and consequences of the most recent financial crisis.

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Notes

¹ For an in-depth explanation of our cost estimates, see "How Bad Was It? The Costs and Consequences of the 2007–09 Financial Crisis," by Tyler Atkinson, David Luttrell and Harvey Rosenblum, Federal Reserve Bank of Dallas *Staff Papers*, no. 20, July 2013. For an analysis of systemic risk and the recent financial crisis, see "Understanding the Risks Inherent in Shadow Banking: A Primer and Practical Lessons Learned," by David Luttrell, Harvey Rosenblum and Jackson Thies, Federal Reserve Bank of Dallas *Staff Papers*, no. 18, November 2012.

² These cost exercises use a 3.5 percent discount factor (considered a mid-range discount rate) to calculate the present value of future forgone output in fourth quarter 2007, the business-cycle peak.

³ West Texas Intermediate crude oil prices doubled over the 12 months prior to July 2008, reaching a nominal record high of \$145 a barrel. See "An International Perspective on Oil Price Shocks and U.S. Economic Activity," by Nathan Balke, Stephen P.A. Brown and Mine Yücel, Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute Working Paper no. 20, September 2008.

⁴ "The Economics of Happiness," speech by Ben S. Bernanke at the University of South Carolina Commencement Ceremony, Columbia, S.C., May 8, 2010.

⁵ The Bureau of Labor Statistics reported 144.3 million employed and 11.5 million unemployed people as of July 2013. Approximately one-sixth of government outlays—expenditures out of general federal tax revenues—fund "means-tested programs" and tax credits that provide cash payments or assistance for health care, food, housing and education to households with relatively low income. These expenditures impose indirect costs on those U.S. residents who pay federal income tax.

⁶ See "New Measures on the Costs of Unemployment: Evidence from the Subjective Well-Being of 2.3 Million Americans," by John F. Helliwell and Haifang Huang, National Bureau of Economic Research, NBER Working Paper no. 16829, February 2011.

⁷ See note 1, Figure 8 in Atkinson, Luttrell and Rosenblum.

⁸ See *Economic Freedom of the World: 2012 Annual Report*, by James Gwartney, Robert Lawson and Joshua Hall (Toronto: Fraser Institute, September 2012).

⁹ See "Choosing the Road to Prosperity: Why We Must End Too Big to Fail—Now," by Harvey Rosenblum, Federal Reserve Bank of Dallas 2011 Annual Report, March 2012.

¹⁰ See "Fiscal Implications of the Global Economic and Financial Crisis," International Monetary Fund Staff Position Note, June 9, 2009.

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